



MultiCatch™ Whipstock Anchor RHN*- RMN* - Type

Scope

The following procedures are intended to provide Procedures for assembling/disassembling:

- **3 1/2-in. OD MultiCatch Whipstock Anchor**
 - o accommodates 4-1/2 - 5 - 5 1/2- 5 3/4-in OD casing
- **5 1/4-in OD MultiCatch Whipstock Anchor**
 - o accommodates 6 5/8 - 7- 7 5/8-in OD casing
- **7-in OD MultiCatch Whipstock Anchor**
 - o accommodates 8 5/8 - 9 5/8 - 10 3/4-in OD casing
- **10-in OD MultiCatch Whipstock Anchor**
 - o accommodates 11 3/4 - 13 3/8 - 14-in OD casing
- **14-in OD MultiCatch Whipstock Anchor**
 - o accommodates 16 - 18 5/8 - 20-in OD casing

Equipment Required

In addition to information contained in this tech unit, the following tools are required:

- Suitable Bench Vise
- Pipe Vise
- Sling
- Hoist
- Anchor Assembly Fixture
- Flat-head Screwdriver
- Rubber Mallet
- Pipe Wrenches
- Air Impact Wrench – 1/2-in. Driver
- Sealable Bag for Shear Screws
- Compressed Air
- Thread Compound
- Teflon Tape™
- Loctite®
- Corrosion Resistant Grease
- Lubricant - Kopr-Kote™, Premalube Red™, Lubriplate™ or equivalent

ANCHOR *		
Retrievable or Permanent	Hydraulic or Mechanical	Sealing or Non-Sealing
Retrievable	Mechanical	Non-Sealing (no packer)
Retrievable	Hydraulic	Non-Sealing (no packer)

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UNIT NO.:	MC-RHN-RMN
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AUTHOR:	rbarker
APPROVED BY:	Ron Barker

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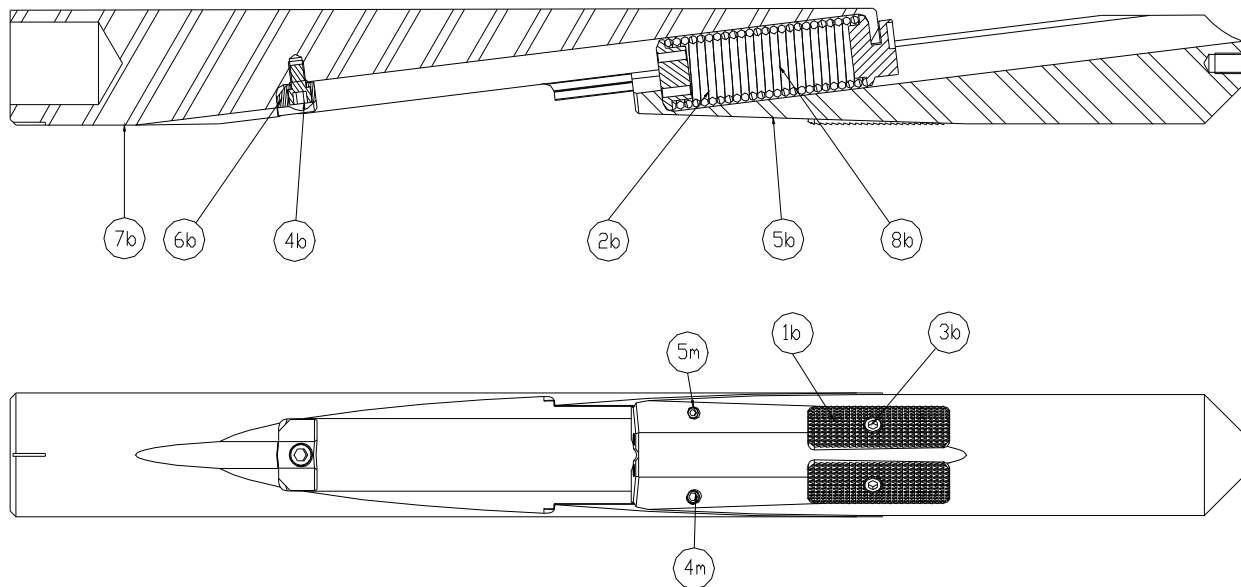


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OVERVIEW

MECHANICAL MODE

The Weatherford MultiCatch Anchor has two main moving parts. An Anchor Body (7b), which is attached either directly to the Concave, or first through a Quick Change Assembly, and a Slip Body (5b) that slides along the tapered face of the Anchor Body (7b), guided by a T-Slot in each component. Slips are attached to the moving Slip Body (5b). A Compression Spring (2b) resides between the Anchor Body (7b) and Slip Body (5b). When the tool is assembled, the Slip Body (5b) is pulled back against the Spring (2b) into its running position. Two Shear Bolts (4m and 5m) are inserted through the Slip Body (5b) into the Anchor Body (7b), which keeps the tool in its running position. To set, the BHA is RIH until the bridge plug (or whatever object will be used for mechanical tripping) is encountered. At this time, weight is applied to the BHA which, at a calculated load, shears the Shear Bolts (4m and 5m) in the Anchor. Once sheared, the spring force is released, moving the Slip Body (5b) along the taper of the Anchor Body (7b), increasing the effective diameter of the Anchor until the Slips (1b) contact the ID of the casing. At this point, applying weight produces relative movement between the Anchor Body (7b) and Slip Body (5b), since the Slips (1b) are now biting the ID of the casing. As this movement occurs, since the Slip Body (5b) and Slips (1b) are now engaging the casing, the Anchor Body (7b) and Concave are forced radially to the opposite side of the casing. The Anchor is designed with clearance areas, such that as the Concave touches the opposite side of the casing, further movement from the Anchor below forces the Concave to pivot on its shoulder where it meets the Anchor. This forces the top end of the Concave back against the casing giving the Whipback effect for low side exit capability. Once these three points of contact are engaged, the Anchor is set.



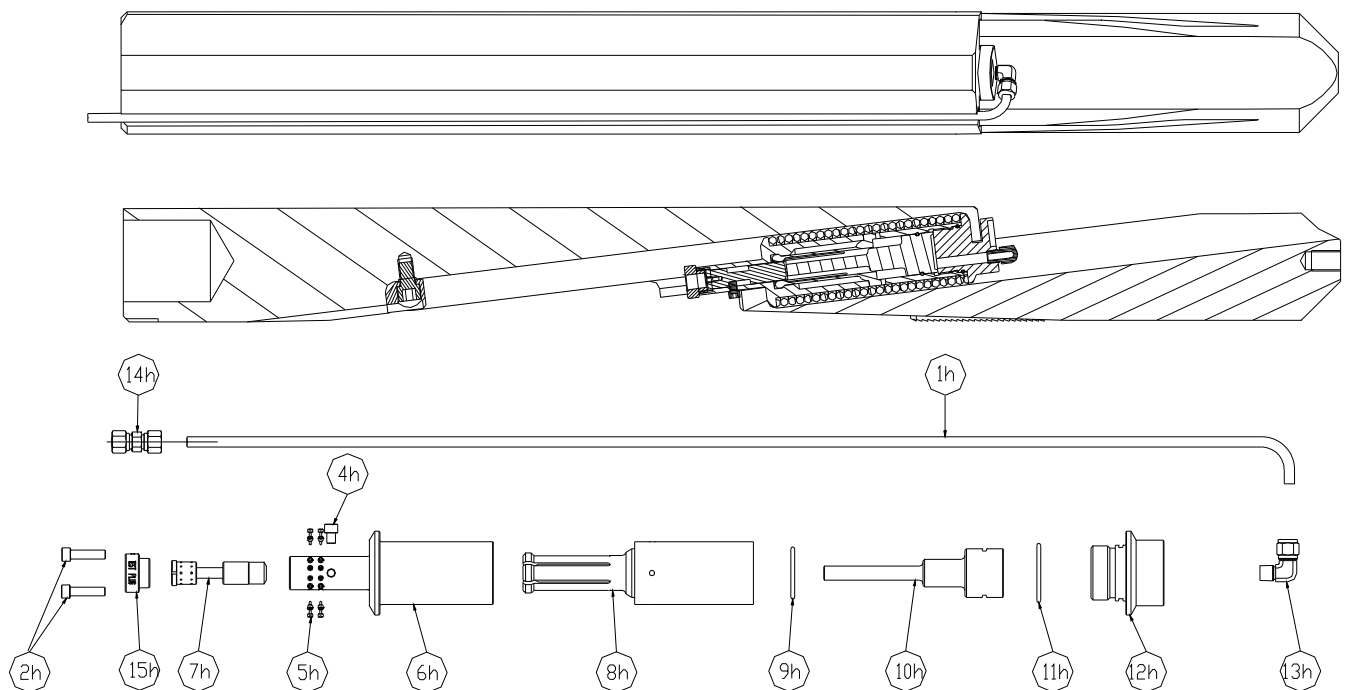


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HYDRAULIC MODE

The difference between the Hydraulic and the Mechanical is the method of holding the Anchor Body (7b) and Slip Body (5b) in the running position until it is set. As the Mechanical uses Shear Bolts (4m and 5m) to accomplish this, the Hydraulic uses a Collet-type latching mechanism located in the ID of the spring (2b). The Collet (8h) is attached to the Anchor Body (7b) and the receptacle that the Collet (8h) latches into (called the Collet Retainer (6h)) is attached to the Slip Body (5b). When assembled and cocked, the Collet (8h) snaps into the Collet Retainer (6h). A Shear Piston (7h) is then installed under the Collet (8h) fingers, preventing them from collapsing, thus locking the tool in the running position. The Shear Piston (7h) is held in this position by a Shear Screw or multiple Shear Screws (5h). There is a Seal Piston (10h) and pressure chamber below the Shear Piston (7h) that will be used to actuate the Anchor when it is time to set. The Milling BHA and Anchor are RIH to depth. After orienting, flow is increased to a predetermined rate through the Lead Mill producing a pressure behind the nozzle in the Mill, which is communicated to the Anchor via a control line. This pressure produces a force on the Seal Piston (10h), which in turn begins to push on the Shear Piston (7h). When the pressure is great enough, the Shear Screws (5h) fail, and the Shear Piston (7h) is forced out from under the Collet (8h) fingers. The spring (2b) preload is now able to force the Collet Retainer (6h) to disengage from the unsupported Collet (8h) fingers. The Slip Body (5b) then travels up the taper of the Anchor Body (7b) until it contacts the casing, as it does in the Mechanical mode. The rest of the setting process is the same as the Mechanical version.

NOTE: Remember to remove the Test Plug (15h) prior to going downhole. This will prevent the Shear Piston (7h) from being able to move forward and set the anchor.





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MECHANICAL MODE

MECHANICAL ASSEMBLY PROCEDURES

Gather all parts per parts list. Inspect all threads and sealing surfaces to ensure all parts are free of damage, paying special attention to areas near sealing members. Repair or replace as necessary. Anti-galling compound should be used on all threads. Downhole grease should be used on all O-rings. To avoid damage to parts, use a soft jaw vise and strap wrenches to tighten connections.

1. Place the Anchor Body (7b) in a vise.

NOTE: For the 7-in. and 10-in. OD Anchors, place the Anchor Body (7b) in the Assembly Fixture.



PHOTOGRAPH 1

2. Apply grease to T-Slot surfaces and rail surfaces of the Anchor Body (7b) and Slip Body (5b).



PHOTOGRAPH 2



PHOTOGRAPH 3

3. Install Lower Plug onto Anchor Body (7b). For the 3-1/2-in. OD Anchor, install and tighten the Set Screw into the Lower Plug. This prevents the possibility of the Lower Plug from falling off during retrieval, as in this size, the Lower Plug is NOT captured between the Anchor Body and Slip Body (5b) when fully stroked out.



PHOTOGRAPH 4



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4. Place the spring (2b) into the spring cavity of the Anchor Body (7b) until it mates with the Lower Plug shoulder. The spring will extend beyond the end of the spring cavity in all sizes except for the 3-1/2-in. OD Anchor.

NOTE: Photo below shows the use of two springs, where ONLY ONE will actually be used.



PHOTOGRAPH 5

FOR 3-1/2-IN. AND 5-1/4-IN. OD ANCHORS ONLY.

- a. Place the Upper Plug onto the end of the spring (2b) and align the tapped holes so that they will later A with the holes in the Slip Body (5b). For the 3-1/2-in. OD Anchor, the Upper Plug should sit in the spring cavity with no preload. For the 5-1/4-in. Anchor, it is necessary to compress the spring (approximately 30-lb) to get the Upper Plug to rest at the end of the spring cavity.



HINT: Depending on how straight the spring (2b) is, it also may be necessary to have someone hold the middle of the spring down to keep it from trying to jump out of the spring cavity.

- b. Lift the Slip Body (5b) over the Anchor Body (7b) and align the T-slot grooves. Then slide the Slip Body down until its shoulders against the Upper Plug. Install the Retaining Bolts (2h) between the Slip Body and the Upper Plug. See Mechanical Anchor Torque Specifications Table on Page 10.
- c. Install the Installation Tool onto the end of the Slip Body (5b).



PHOTOGRAPH 6



PHOTOGRAPH 7



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FOR 7-IN. AND 10-IN. OD ANCHORS ONLY:

NOTE: Due to the higher forces involved on the larger sizes, the spring (2b) is NOT compressed by hand.

- Place the Upper Plug into the upper end of the Slip Body (5b). Orient the holes of the face of the Upper Plug such that they align with holes of Slip Body. Temporarily install one or more Retaining Bolts (2h).



PHOTOGRAPH 8

- Using a crane, eyebolt and shackle, maneuver the Slip Body (5b) to engage the Upper Plug into the end of the spring (2b). Insert an eyebolt into the end of the Slip Body. Extend the machine screw jack as far as it will go. Attach a sling between the jack and eyebolt. Pull the Slip Body back with the machine screw jack, keeping the crane above the Slip Body as it moves, until the Upper Plug and Spring drop into the spring cavity.

NOTE: This part of the procedure is to compress the spring into the cavity. Do NOT attempt to slide the Slip Body into the T-slot until the spring and Collet Retainer (6h) have dropped into the cavity.

- The T-slots will NOT line up at this time, so guide the Slip Body (5b) such that the bottom of it slides on the top of the Anchor Body (7b).



CAUTION: Keep weight on the Upper Plug end of the Slip Body (5b) during the process to keep the front end from lifting up and damaging the spring (2b).

- Lower the crane during the process when necessary, to allow the Upper Plug to drop into place.



PHOTOGRAPH 9



PHOTOGRAPH 10

- Once the Upper Plug is in place, remove the Retaining Bolt(s) (2h).



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- f. Extend the machine screw jack to slack off on the sling, and pull the Slip Body (5b) forward until the back end drops to allow the T-slots to line up. Keep weight on the front end of the Slip Body (5b) during the process, and lower the crane so it can drop into place. Remove the sling and attach the eyebolt directly to the machine screw jack.



PHOTOGRAPH 11

- g. Once the T-slots line up, use the jack to draw the Slip Body (5b) back into the T-slot and pull back until it shoulders on the Upper Plug. If necessary, align the bolt holes with a brass rod and install the Retaining Bolts (2h), making up to recommended make-up torque. See Mechanical Anchor Torque Specifications Table on Page 10.



PHOTOGRAPH 12

5. Draw the Slip Body (5b) back and begin to compress the spring (2b). For the 3-1/2-in. and 5-1/4-in. OD Anchors, use an air impact wrench as shown in the photograph below. For the 7-in. and 10-in. OD Anchors, use the machine screw jack.



PHOTOGRAPH 13



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- Continue to draw the Slip Body (5b) back until the tapped holes in the Slip Body align with the holes in the Anchor Body (7b).

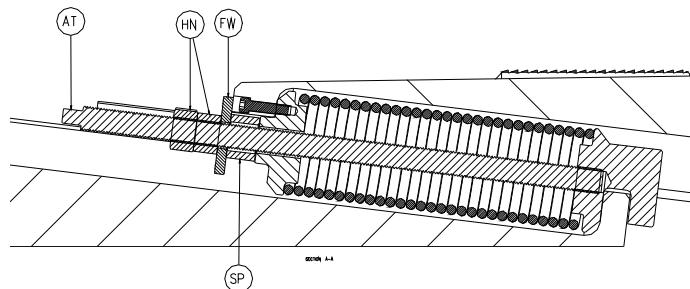


HINT: It is helpful to mark the location of the holes in the Anchor Body (7b) ahead of time to quickly achieve rough alignment.



PHOTOGRAPH 14

- Do NOT install the two Shear Screws (4m and 5m). Place two sets (two each) of Shear Screws (4m and 5m) in a sealable bag and tape them to a location on the Anchor that will NOT be susceptible to handling damage. Fill tapped holes with corrosion resistant grease (keeps holes free of debris).
- Installation of Safety Device Kit: (With assembly tool/fixture attached)
 - Insert all-thread (AT) through Upper Washer and thread into Lower Washer
 - Slide spacer (SP) and washers (FW) onto all-thread
 - Thread nuts (HN) onto all-thread and tighten against washer



PHOTOGRAPH 15

- Install the Retainer Block (6b) and Bolt (4b). See Mechanical Anchor Torque Specifications Table on Page 10.

NOTE: This does NOT apply to the 3-1/2-in. size Anchor.



PHOTOGRAPH 16



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10. Install Slips (1b) on Slip Body (5b), making Bolts (3b) up to proper torque. See Mechanical Anchor Torque Specifications Table below.



PHOTOGRAPH 17

11. The Anchor (shown with Safety Device in place) is now ready to be made up to the Concave.



PHOTOGRAPH 18

MECHANICAL ANCHOR TORQUE SPECIFICATIONS

OD (in.)		3-1/2	5-1/4	7	10
DESCRIPTION	ITEM NUMBER	TORQUE (ft-lb)			
Slip Body to Upper Bolts	1m	15	35	60	150
Retainer Block to Anchor Body Bolt	4b	n/a	120	200	200
Slip to Slip Body Bolts	3b	23	60	200	200
Slip Body to Anchor Body Shear Bolts	4m 5m	5 (both)	35 (4m) 60 (5m)	35 (4m) 60 (5m)	35 (4m) 60 (5m)



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MECHANICAL DISASSEMBLY PROCEDURES

Thoroughly clean all parts and inspect for damage. Replace parts as needed. To minimize corrosion damage, coat all parts with oil.

1. Place the Anchor Body (7b) in a vise.

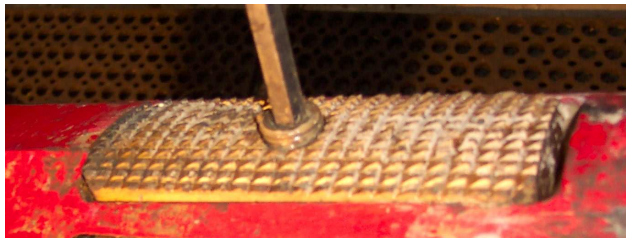
NOTE: The 14-in. OD Anchor; place the Anchor Body (7b) in the Assembly Fixture.



PHOTOGRAPH 1

2. Remove the Slip Retaining Bolt (3b) from each Slip (1b).

NOTE: There are two Bolts (3b) per Slip (1b) on the 14-in. OD Anchor.



PHOTOGRAPH 2

3. Remove both Slips.
4. Attach Installation Tool to end of Slip Body (5b).
5. Use an air impact wrench to actuate the Installation Tool, and draw the Slip Body (5b) back until the Retainer Block (6b) is accessible.
6. Remove Bolt (4b) from Retainer Block (6b).
7. Remove Retainer Block (6b).
8. Reverse the air wrench and actuate the Installation Tool to allow the Slip Body (5b) to fully stroke and relieve stored spring energy.
9. Remove the Installation Tool.
10. Remove Upper Washer (3m) screws from Slip Body (5b).
11. Slide and lift Slip Body (5b) off of Anchor Body (7b). For the 14-in. OD Anchor, install Lifting Eye and use a hoist.



PHOTOGRAPH 3



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12. Pick up the Upper Washer (3m) and remove from the Spring (2b).



PHOTOGRAPH 4

13. Remove the spring (2b) from the spring cavity.
14. Lift Lower Plug (12h) off of the Anchor Body (7b).
15. Clean and inspect parts.

HYDRAULIC MODE

HYDRAULIC ASSEMBLY PROCEDURES

Gather all parts per parts list. Inspect all threads and sealing surfaces to ensure all parts are free of damage, paying special attention to areas near sealing members. Repair or replace as necessary. Anti-galling compound should be used on all threads. Downhole grease should be used on all O-rings. To avoid damage to parts, use a soft jaw vise and strap wrenches to tighten connections.

1. Place Anchor Body (7b) on a vise.

NOTE: The 7-in. and larger Anchors, place in the assembly fixture.



PHOTOGRAPH 1



PHOTOGRAPH 2

2. Apply grease to T-Slot and rail surfaces of the Anchor Body (7b) and Slip Body (5b).



PHOTOGRAPH 3



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- Grease the bore of the Collet (8h), as well as the inside and outside of the fingers.



PHOTOGRAPH 4

- Grease and install the O-Ring (9h) onto the Seal Piston (10h).



PHOTOGRAPH 5

- Install the Seal Piston (10h) into the Collet (8h) bore.

NOTE: For the 7-in. OD and larger Anchors, place Collet (8h) in a vise and use a brass rod and hammer to position Seal Piston (10h) into seal bore.



PHOTOGRAPH 6



PHOTOGRAPH 7



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6. Grease and install the O-Ring (11h) onto the Lower Plug (12h).



PHOTOGRAPH 8

7. Make up the Lower Plug (12h) to the Collet (8h).



PHOTOGRAPH 9



PHOTOGRAPH 10

8. Place the Lower Plug (12h) / Collet (8h) / Seal Piston (10h) subassembly in a vise. Tighten with a pipe wrench. See Hydraulic Anchor Torque Specifications Table on Page 22.



PHOTOGRAPH 11



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PHOTOGRAPH 12

9. Install the Lower Plug (12h) / Collet (8h) / Seal Piston (10h) subassembly onto the Anchor Body (7b).



PHOTOGRAPH 13



PHOTOGRAPH 14

10. Wrap the NPT thread of the Elbow Fitting (13h) with Teflon Tape. Install the Elbow Fitting into the end of the Lower Plug (12h), having its final orientation towards the groove in the Anchor Body (7b) where the Tubing (1h) will be run.

NOTE: 3-1/2-IN. OD SIZE ONLY: The Elbow Fitting (13h) is to be mounted into the V-slot of the Lower Plug (12h), with the 1/8-in. NPT hole on the end plugged with the included Pipe Plug, which is first wrapped in Teflon tape.



PHOTOGRAPH 15

11. Grease the ID on both ends of the Collet Retainer (6h).
12. Place the Collet Retainer (6h) into the upper end of the spring (2b) until it shoulders on the end of the spring.



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FOR 3-1/2-IN. AND 5-1/4-IN. OD ANCHORS ONLY:

- a. Place the Spring (2b) into the spring cavity of the Anchor Body (7b), sliding it over the Collet (8h), until it mates with the Lower Plug (12h) shoulder.



PHOTOGRAPH 16

- b. Rotate the Collet Retainer (6h) until the mounting holes are aligned with the Slip Body (5b) holes.
- c. Lift Slip Body (5b) over Anchor Body (7b) and align T-Slot grooves. Then slide the Slip Body (5b) down until it shoulders against the Collet Retainer (6h). Install the Retaining Bolts (2h) between the Slip Body (5b) and the Collet Retainer (6h). See Hydraulic Anchor Torque Specifications Table on Page 22.

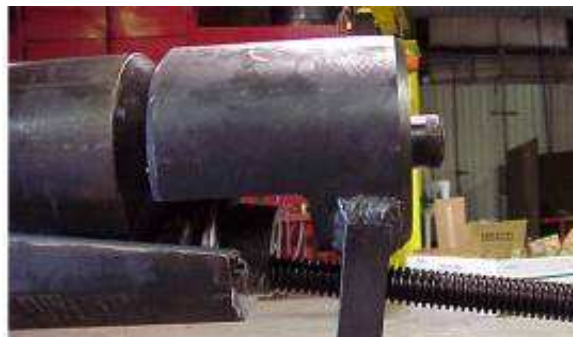


PHOTOGRAPH 17

- d. Install the Installation Tool onto the end of the Slip Body (5b).



PHOTOGRAPH 18



PHOTOGRAPH 19



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FOR 7-IN. THRU 14-IN. OD ANCHORS ONLY:

- a. Place the lower spring (2b) over the Collet assembly until the spring shoulders on the Lower Plug (12h).



PHOTOGRAPH 20

- b. Install the Spring Washer into the end of the lower spring.

NOTE: Steps B and C are for 14-in. OD anchor only.



PHOTOGRAPH 21

- c. Install the upper spring into the Spring Cavity over the Spring Washer.

NOTE: The Springs are longer than the cavity, so the upper spring will not sit fully in the cavity.



PHOTOGRAPH 22

- d. Place the Collet Retainer (6h) into the upper end of the spring (2b), or Upper Spring for the 14-in. OD Anchor. Orient the hole pattern such that they will line up with the holes in the Slip Body (5b).



PHOTOGRAPH 23



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- e. Using a crane, eyebolt and shackle, lift and lower the Slip Body (5b) onto the Collet Retainer (6h).

NOTE: This part of the procedure is to compress the spring (2b) into the cavity. Do NOT attempt to slide the Slip Body (5b) into the T-slot until the spring and Collet Retainer (6h) have dropped into the cavity.



PHOTOGRAPH 24

- f. Line up holes and install one of the Retaining Bolts (2h) to temporarily attach the Collet Retainer (6h) to the Slip Body (5b).



PHOTOGRAPH 25

- g. Insert eyebolt into the end of the Slip Body (5b). Extend the machine screw jack as far as it will go. Attach a sling between the jack and eyebolt.



PHOTOGRAPH 26

- h. Pull the Slip Body (5b) back with the machine screw jack, keeping the crane above the Slip Body (5b) as it moves, until the Collet Retainer (6h) and spring (2b) drop into the spring cavity. The T-slots will NOT line up at this time, so guide the Slip Body (5b) such that the bottom of it slides on the top of the Anchor Body (7b). Keep weight on the Collet Retainer (6h) end of the Slip Body (5b) during the process to keep the front end from lifting up and damaging the spring (2b). Lower the crane during the process when necessary, to allow the Collet Retainer (6h) to drop into place.



PHOTOGRAPH 27



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- i. Once the Collet Retainer (6h) is in place, remove the Retaining Bolt (2h) that attached the Collet Retainer (6h) to the Slip Body (5b).



PHOTOGRAPH 28

- j. Extend the machine screw jack to slack off on the sling, and pull the Slip Body (5b) forward until the back end drops to allow the T-slots to line up. Keep weight on the front end of the Slip Body during the process, and lower the crane so it can drop into place.



PHOTOGRAPH 29

- k. Once the T-slots line up, use the jack to draw the Slip Body (5b) back into the T-Slot and pull back until it shoulders up on the Collet Retainer (8h) again. Be sure the "nose" of the Collet Retainer (8h) clears the opening in the Slip Body (5b) as it is drawn back.



PHOTOGRAPH 30

- l. Once they are shouldered, align the bolt holes and install the Retaining Bolts (2h), making up to recommended make-up torque. See Hydraulic Anchor Torque Specifications Table on Page 22. Use a pipe wrench to rotate (no jaws on shear screw holes) and a brass rod in the end of the Collet Retainer (8h) to align holes if necessary. Remove sling from between the eye bolt and the jack.



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13. For the 7-in. OD Anchors and larger, use a shackle to connect the machine screw jack to the eye bolt in the end of the Slip Body (5b) – no sling is used here. With an air impact wrench, actuate the Installation Tool to draw the Slip Body (5b) back and cock the Anchor. For the 3-1/2-in. and 5-1/4-in. OD Anchors, use a hand drill with 1/2-in. drive adapter to actuate the machine screw jack, and draw the Slip Body (5b) back.

NOTE: Movement will stop when the Collet (8h) Latches into the Collet Retainer (6h). To assure that movement does NOT stop prematurely; note that the shear bolt holes in the Slip Body (5b) have to line up with the holes in the Anchor Body (7b) (as in the mechanical mode). If they line up, proceed to the next Step. If they do not, reverse the air wrench (drill for the 14-in. Anchor) and back the Installation tool off to relieve all spring force, remove the Slip Body and determine what is prohibiting proper assembly.



PHOTOGRAPH 31



PHOTOGRAPH 32

14. Install the Retainer Block (6b) and Bolt (4b). See Hydraulic Anchor Torque Specifications Table on Page 22.

NOTE: This does NOT apply to the 3-1/2-in. size Anchor, which does NOT use a Retainer Block (6b).



PHOTOGRAPH 33



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- Grease the OD of the Shear Piston (7h), and then place it into the nose of the Collet Retainer (6h). It must be inserted far enough such that the upset shoulder bottoms out on the internal shoulder of the Collet Retainer (6h). In this position, the tapped holes in the Collet Retainer (6h) should axially align with the holes in the Shear Piston (7h). Rotate the Shear Piston (7h) with a flat screwdriver such that the shear holes in the Collet Retainer (6h) rotationally line up with the holes in the Shear Piston (7h). In this position, the end of the Shear Piston (7h) is under the fingers of the Collet (8h), which prevents the Collet (8h) from releasing when the Installation Tool is removed. If the Shear Piston (7h) cannot be inserted far enough to axially align the shear screw holes, use a brass rod and hammer to lightly shift it to the proper position.



CAUTION: If this does NOT solve the axial alignment of the shear holes, a disassembly and dimensional inspection of the parts will be required to resolve the problem. The holes in the Shear Piston (7h) **SHOULD BE ALIGNED** with the holes in the Collet Retainer (6h) before proceeding to the next assembly Step.



PHOTOGRAPH 34

- For all five sizes of Anchors, thread the Test / Shipping Plug (15h) into the Collet Retainer (6h). Wire the warning tag to the hole located on the Test / Shipping Plug (15h). This tag warns the operator that the plug must NOT be taken out until just prior to going downhole.



CAUTION: This tag warns the operator that the plug must NOT be taken out until just prior to going downhole.

- Install the Travel Limiting Bolt (4h) into the Collet Retainer (6h). See Hydraulic Anchor Torque Specifications Table on Page 22.



PHOTOGRAPH 35

- For the 7-in., 10-in. and 14-in. OD Anchors, install the shipping bar and its bolt.



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19. Install the Slips (1b) onto the Slip Body (5b) with their Bolts (3b). See Hydraulic Anchor Torque Specifications Table below.

NOTE: The 10-in. and 14-in. OD Anchors have two bolts per Slip; NOT shown in photograph below.



PHOTOGRAPH 36

20. For shipment from the manufacturing plant to the district, tape the Tubing (1h), bagged Shear Screws (5h) and Hydraulic Union (14h) or tee fitting to the Anchor. The assembly of the hydraulic circuit and subsequent system pressure test will be done at the district.

HYDRAULIC ANCHOR TORQUE SPECIFICATIONS

OD (in.)		3-1/2	5-1/4	7	10	14
DESCRIPTION	ITEM NUMBER	TORQUE (ft-lb)				
Collet to Lower Plug	8h and 12h	50	150	200	200	200
Slip Body to Collet Retainer Bolts	2h	15	35	60	150	200
Retainer Block to Anchor Body Bolt	4b	n/a	120	200	200	200
Slip to Slip Body Bolts	3b	23	60	200	200	200
Travel Limit Screw in Collet Retainer	4h	5	14	30	30	60
Shear Pins in Collet Retainer	5h	Finger-Tight with Screwdriver				

See AccuSet™ Calculator for proper number of Shear Screws (5h); specific to each job.



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HYDRAULIC DISASSEMBLY PROCEDURES

Thoroughly clean all parts and inspect for damage. Replace parts as needed. To minimize corrosion damage, coat all parts with oil.

1. Place the Anchor Body (7b) in a vise. Note: for the 14-in. OD Anchor; place the Anchor Body in the Assembly Fixture.

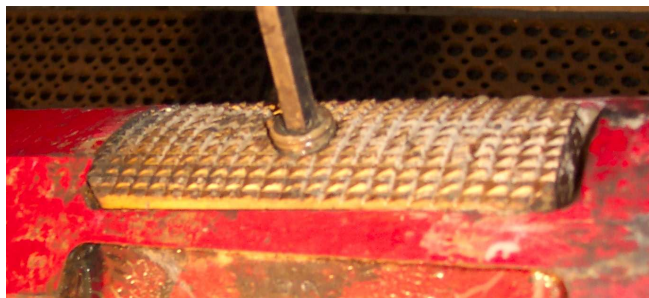
NOTE: On Steps 4 to 9, the 5 1/4-in. tool, the Retainer Block (6b) may be removed (Steps 6 and 7) after all other disassembly is complete.



PHOTOGRAPH 1

2. Remove the Slip Retaining Bolt (3b) from each Slip (1b).

NOTE: There are two bolts per Slip (1b) on the 10 and 14-in. OD Anchors.



PHOTOGRAPH 2

3. Remove both Slips.

NOTE: On Steps 4 thru 9, the 5 1/4-in. tool, the Retainer Block (6b) may be removed (Steps 6 and 7) after all other disassembly is complete.

4. Attach Installation Tool to end of Slip Body (5b).
5. Use an air impact wrench to actuate the Installation Tool, and draw the Slip Body back until the Retainer Block (6b) is accessible.
6. Remove the Bolt (4b) from the Retainer Block (6b).
7. Remove Retainer Block (6b).
8. Reverse the air wrench and actuate the Installation Tool to allow the Slip Body (5b) to fully stroke and relieve stored spring energy.
9. Remove the Installation Tool.
10. Remove Shear Piston Travel Limit Screw (4h) from the Collet Retainer (6h).
11. Screw all-thread into the Shear Piston (7h) and pull the Shear Piston (7h) out of Collet Retainer (6h).
12. Using compressed air, blow the shear screw remnants from the holes in the Shear Piston (7h).
13. Remove Collet Retainer (6h) screws from Slip Body (5b).



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14. Slide and lift Slip Body (5b) off of Anchor Body (7b).

NOTE: For the 14-in. OD Anchor, install Lifting Eye and use a hoist.



PHOTOGRAPH 3

15. Pick up the Collet Retainer (6h) and remove from the Spring (2b).



PHOTOGRAPH 4

16. Remove the spring (2b) from the spring cavity.
17. Disconnect the Tubing (1h) from the Elbow Fitting (13h) on the Lower Plug (12h).



PHOTOGRAPH 5

18. Remove the Elbow Fitting (13h).



PHOTOGRAPH 6



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19. Lift Lower Plug (12h) and Collet (8h) off of the Anchor Body (7b) and place Lower Plug in a vise.
20. Break the threaded connection between the Collet and Lower Plug; Remove the Collet from the Lower Plug.
21. Remove Seal Piston (10h) from the Collet (8h) bore. Use a hammer and brass rod, through the finger end of the Collet, to tap the Seal Piston out of the bore.
22. Remove the Tubing (1h) from the union Fitting at the Quick Change Sub.

NOTE: Remove tubing from Tee Fitting on the 14-in. OD Anchor, as this size does NOT have a Quick Change Sub.

23. Remove Tee Fitting from the Anchor Body (7b) on 14-in. OD Anchor.



PHOTOGRAPH 7

24. Remove and dispose of all seals. Clean and inspect parts.